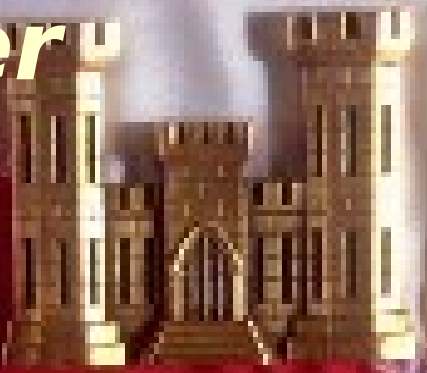
Managing the Resource: Problems and Prospects for Archaeological Site Conservation along the Upper Mississippi River



Presentation for the

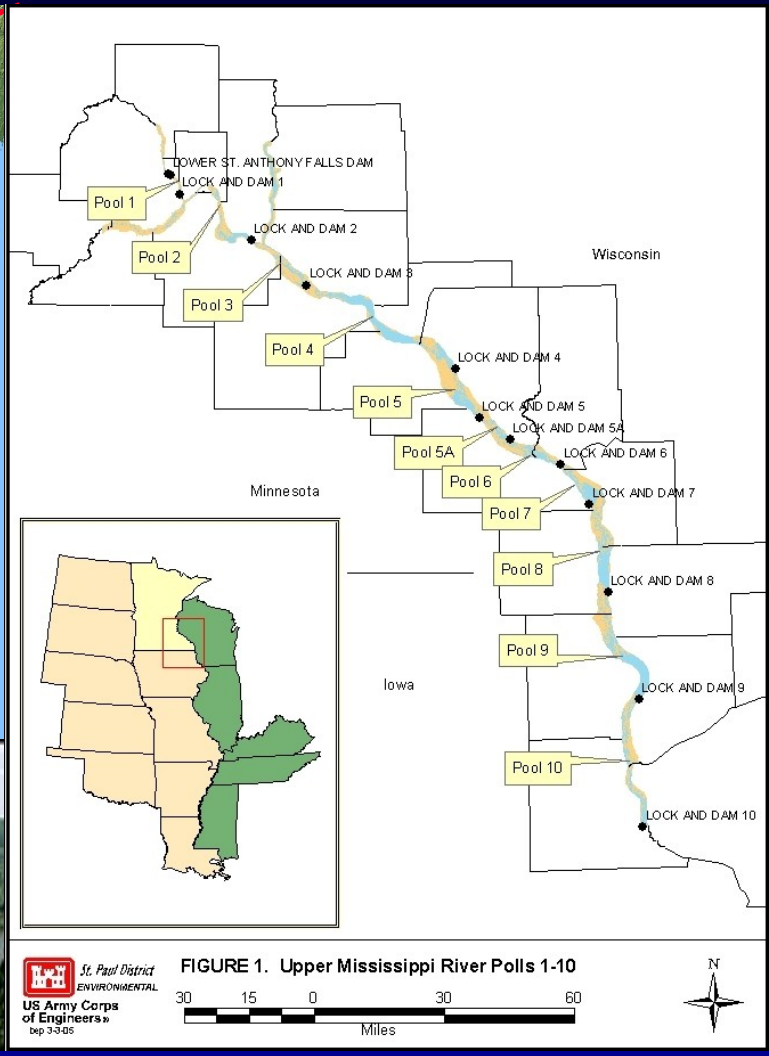
Planning Community of Practice Conference 2006

By

Bradley E. Perkl
MVP District Archaeologist

US Army Corps of Engineers

St. Paul District:
Upper Mississippi River Navigation Pools 1-10



Upper Mississippi River: Culture History

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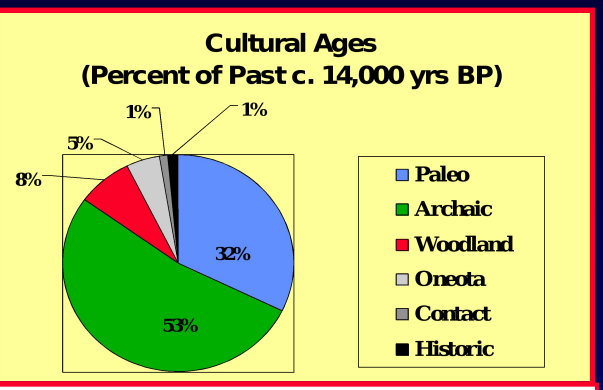

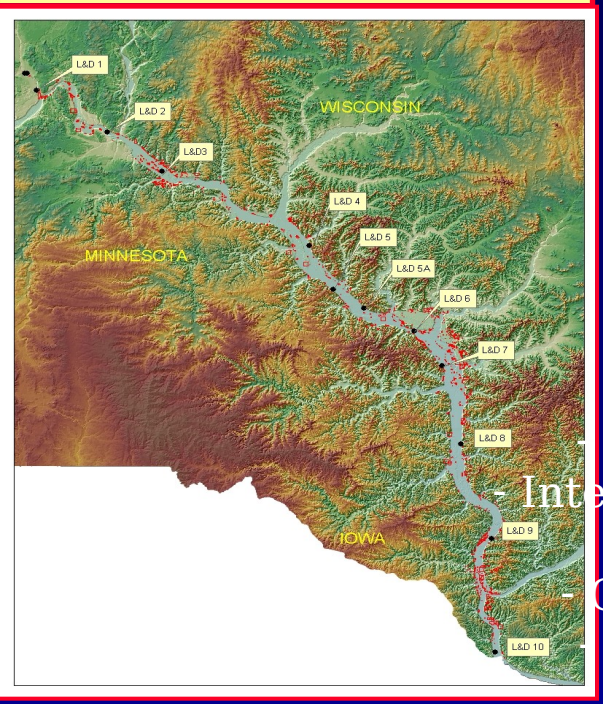

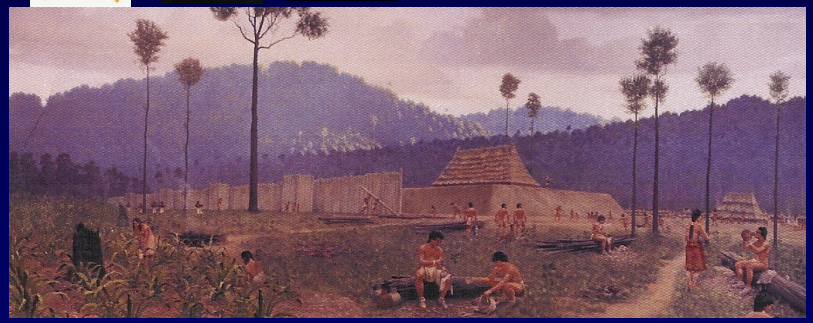

Approximately 2,200 Identified Cultural Resources Sites in Pools 1-10

- Major component of our cultural heritage
- Integral elements of the UMR physical landscape
- Sites are unique, nonrenewable assets
- Once destroyed or lost, cannot be replaced
- Irreplaceable legacy protected under law and warrants preservation

Upper Mississippi River: Environmental Diversity

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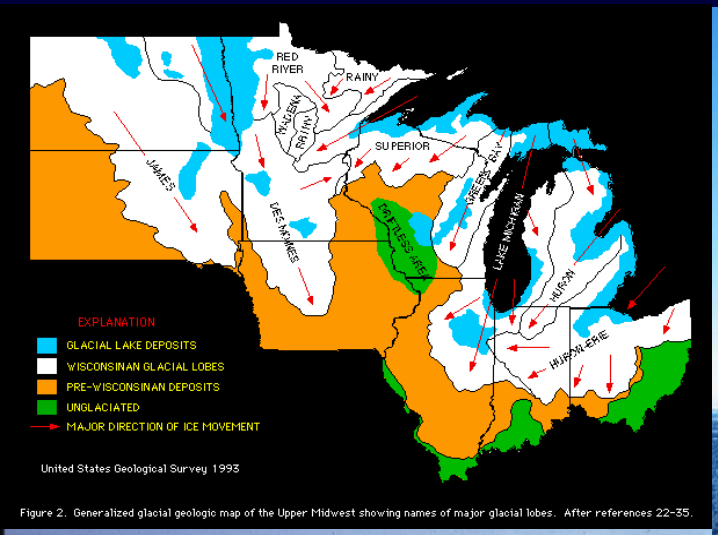
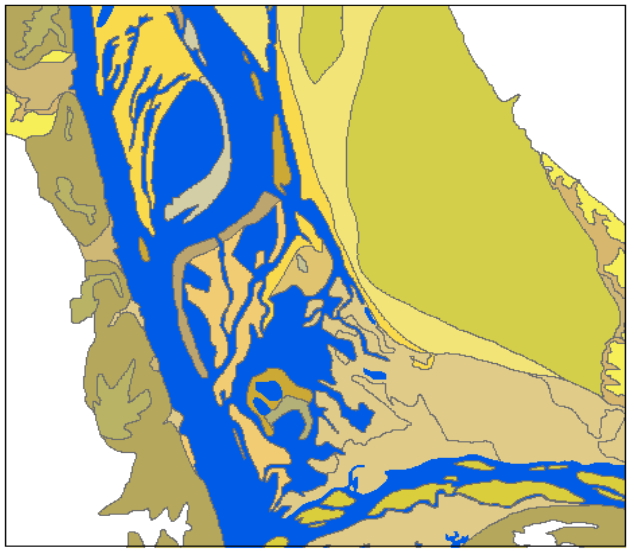
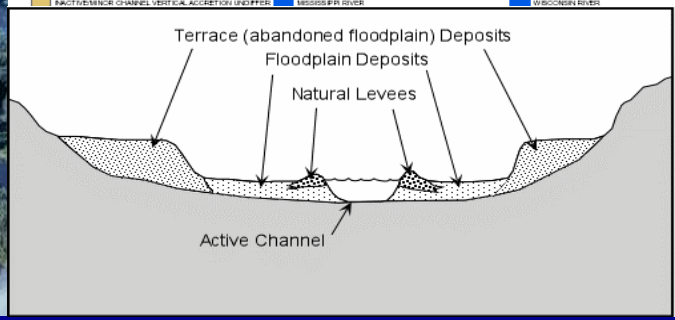


Figure 2. Generalized glacial geologic map of the Upper Midwest showing names of major glacial lobes. After references 22-35.



UMR Pool 10: Example of Geomorphological Diversity



Upper Mississippi River: Historic Landscape/Environment Change - Lock and Dam System

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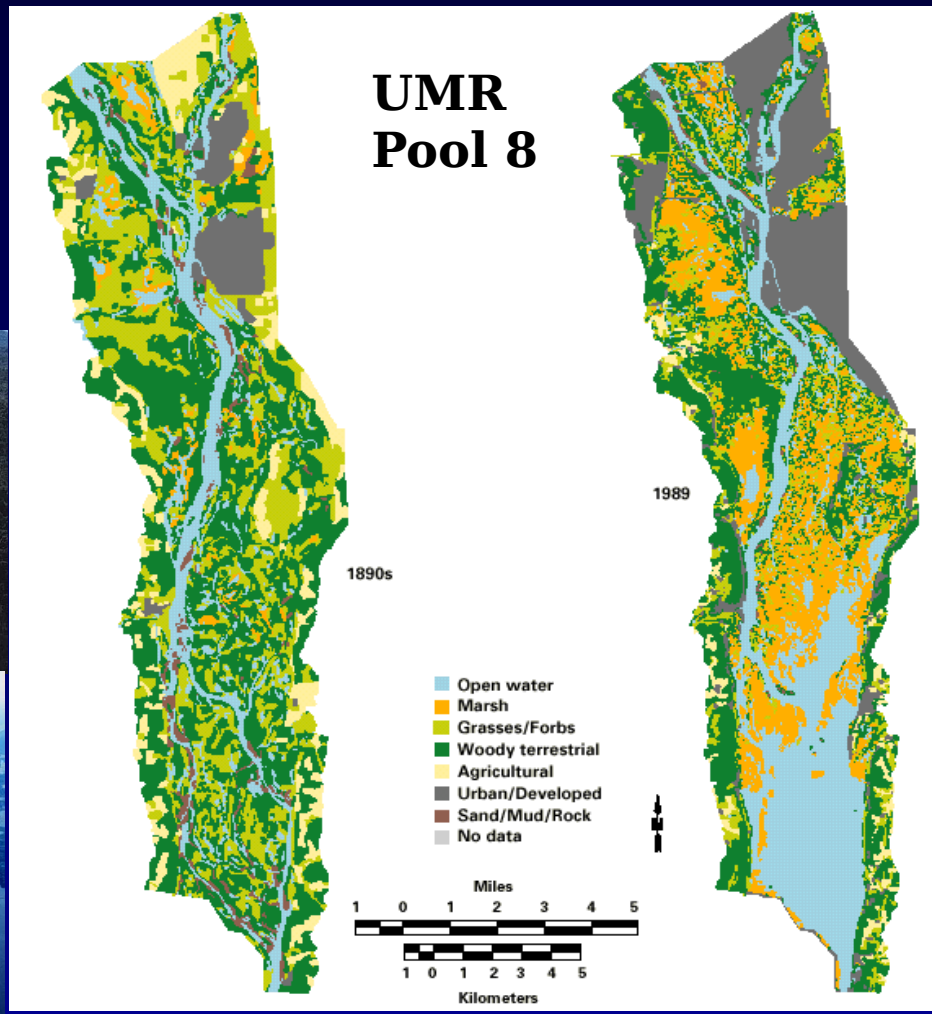
Locks and Dams constructed in the 1930s to create
Nine-Foot Navigation Channel between St. Louis and Minneapolis.
St Paul District (Minneapolis, MN to Guttenberg, IA):

- 13 Locks and Dams
- 12 Impoundments (
- Artificial levees and embankments/ other structures

Some environment impacts:

- Raised water levels
- Increased flood frequency/severit
- Shoreline erosion (adverse impacts o environment and cultural resources)



Upper Mississippi River: Shoreline Erosion – Adverse Impacts to Cultural Resources

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Impact examples:
- Inundation
- Sustained high water levels
- Directed river current
- Wave action
  - Boats
  - Wind/Ice

Adverse effects:
- Site destruction
- Looting/vandalism (Illegal on federal lands)

UMR Cultural Stewardship:

Archaeological Site Shoreline Erosion Monitoring Study

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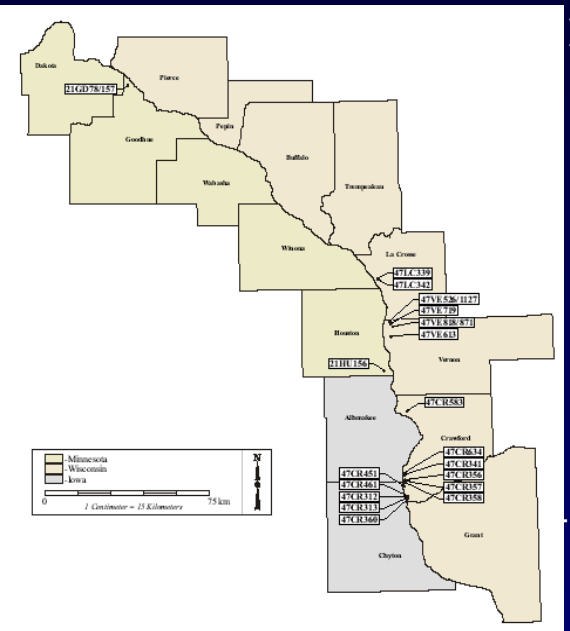


Navigation and Ecosystem Sustainability Program (NESP) funded

- MVP completed monitoring at 20 most threatened sites in FY05

Prioritized by:

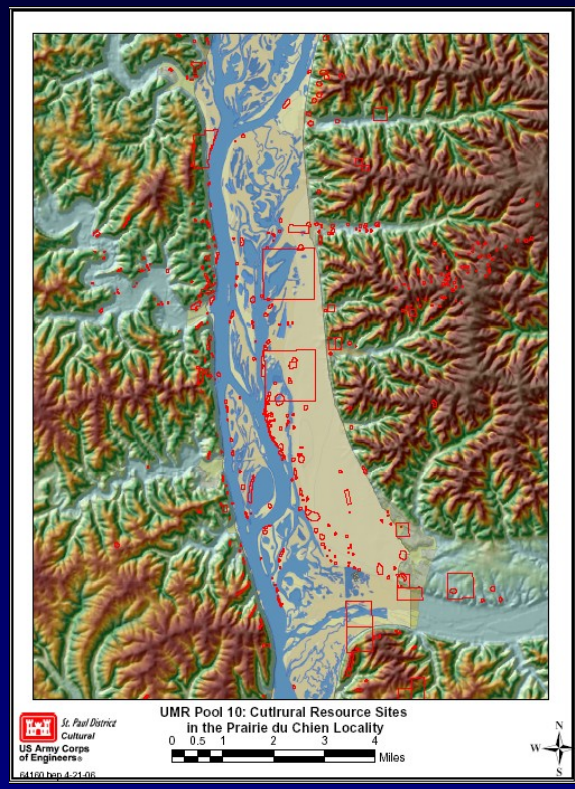
- Significant deposits (density/diversity/eligible or listed on NRHP)

- High rates of erosion observed (20+yrs) by professional archaeologists/ river managers/local informants

-Predicted increased erosion (imminent loss of site) and other adverse impacts (e.g., development/looting)

- Potential for long-term survival/likely ability to provide important information (eligible for NRHP)

- Located on federal lands (USACE and USFWS)



Prairie du Chi
locality:
c. 100 shoreli
sites in 12 mil
stretch

UMR Cultural Stewardship:

Archaeological Site Shoreline Erosion Monitoring Study

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Goals:

- Preserve/Protect eroding significant cultural resources
- Establish base-line conditions for assessment of erosion
- One preservation method is shoreline protection measures (structural and non-structural)
- Idiosyncratic nature of each site (e.g., vertical and horizontal extent of deposits) and its natural setting (e.g., bank geometry, vegetation), determines susceptibility/extent of erosion and protection scheme
- Least impacts to site/environment with greatest benefits for least cost (values for nonrenewable resources are incalculable)
- Protecting cultural resource sites will also have environmental benefits

Long-Term Plan:

- Continue to monitor archaeological site erosion
- Expand site monitoring program
- Formulate and refine site management and preservation strategies

UMR Cultural Stewardship:

Archaeological Site Shoreline Erosion Monitoring Study

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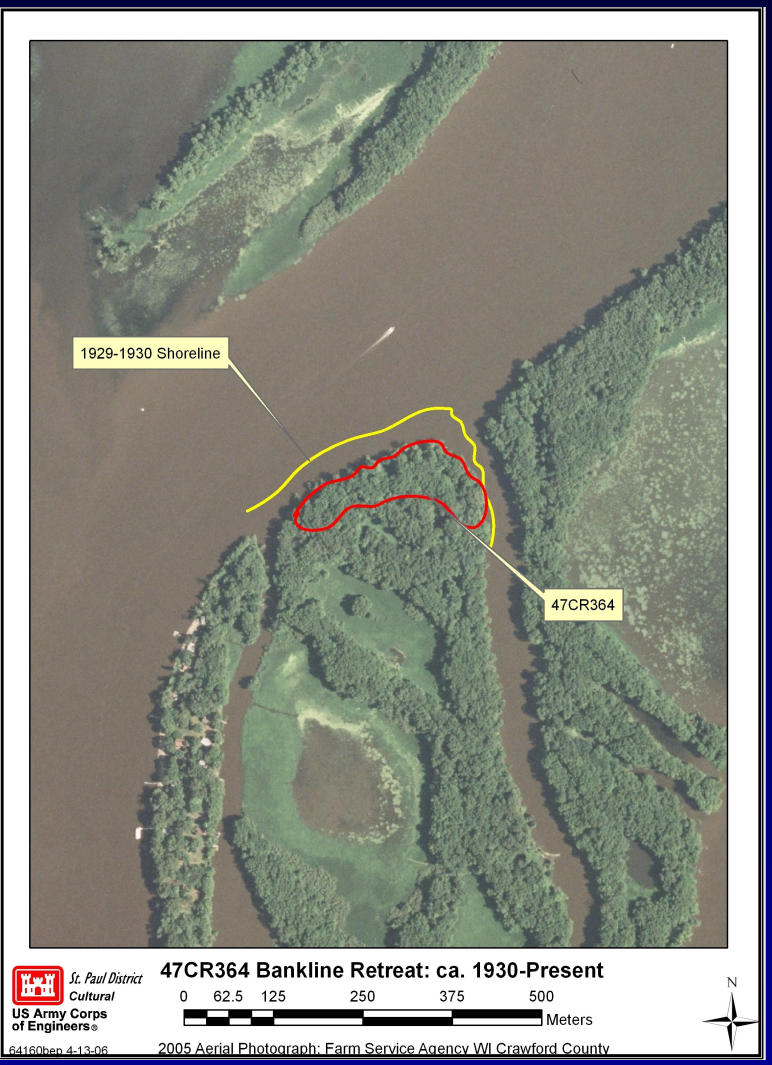

47CR364: (Indian Isle) c. 45 m (c.135 ft) of bankline retreat in last 60+ years

FY05 MVP Results:

- Shoreline loss ranges from c. 5-50 m (c. 15-150 ft) over the past 60-70 years
- Almost all archeological deposits along shorelines have been and are being adversely affected in some manner
- Many sites have been seriously damaged or destroyed
- In some cases, erosion abating with natural establishment of vegetation

General Observations of UMR in MVP and MVR:

- Shoreline loss range from .2-1 m (.7-3.3ft) per year
- Many sites may be significantly impacted

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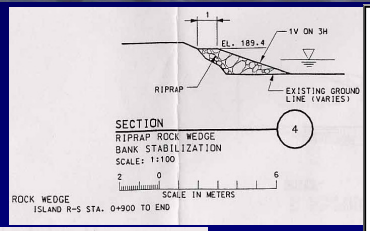
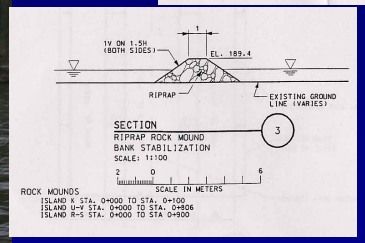
UMR Cultural Stewardship:

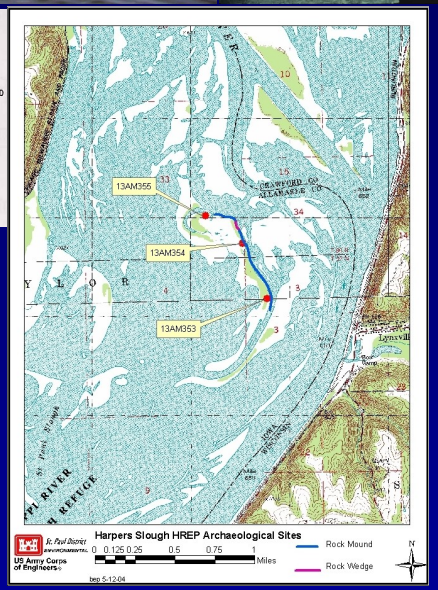
Prospects For Site Conservation

Site Management Options:

- Mitigation/Data Recovery
  (site excavation is destructive/ can be costly)
- Shoreline protection
  - Rip Rap
    - Rock mounds
    - Rock wedges
    - Etc.
- Less aesthetic







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UMR Cultural Stewardship:

Prospects For Site Conservation

Site Management Options - Re-vegetation Schemes:

- Minor pool drawdowns
- Site specific projects (e.g., plantings)
- Indirect benefits from other projects, e.g., HREP
- Naturally occurring
- Aesthetically agreeable

Upper Mississippi River: Cultural Resources Planning

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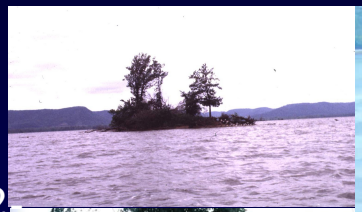
- Cultural stewardship is a federal requirement and an important responsibility of the Corps (e.g., NHPA/Sec 106; ER-1130-2-540)

- Involve cultural resource staff at the Inception of a project

- Robust planning will reduce reactive site management, which may involve project delays and increased costs, to proactive site management, such as site avoidance, protection and tribal/partner/public buy-in

- Unquestionably, protecting cultural resource sites will also provide various



Managing the Resource: Problems and Prospects for Archaeological Site Conservation along the Upper Mississippi River

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Key Takeaway Points

- Cultural Resources are an irreplaceable legacy protected under law and warrants preservation

- UMR shoreline erosion is a significant problem

- Almost all archeological deposits along UMR shorelines have been and are being adversely affected in some manner

- Many UMR sites have been seriously damaged or destroyed

- Viable preservation methods are available

- Early cultural resources involvement will lead to proactive planning resulting in successful site preservation with other environmental benefits